

CLAIMS

What is claimed is:

1. A dryer assembly for drying a liquid ink image formed on a substrate, the assembly comprising:

(a) a housing defining a portion of a sheet moving path;

(b) a plenum positioned within the housing, the plenum including air flow and outlet means contiguous to the plenum permitting forced air to exit the plenum, the outlet means being in the form of a plurality of moving openings adapted to direct flowing air through the openings to the liquid image, the openings moving relative to the image; and

(c) a substrate transport device for moving the substrate carrying the liquid ink image through the housing and under the plurality of moving openings so as to quickly dry the liquid ink image.

2. A dryer assembly in accordance with claim 1 wherein said substrate is paper.

3. A dryer assembly in accordance with claim 1 wherein said assembly is a dryer in an ink-jet printing apparatus.

4. A dryer assembly in accordance with claim 1 wherein said assembly is a dryer in a facsimile machine.

5. A dryer assembly in accordance with claim 1 wherein said assembly is a dryer in a xerographic copier.

6. A dryer assembly in accordance with claim 1 wherein said forced blowing air is heated air.

7. A dryer assembly in accordance with claim 6 wherein said forced blowing air is heated to a temperature sufficiently high to effect drying of said liquid ink but low enough so as not to cause scorching of said substrate after prolonged exposure to said forced heated air.

8. A dryer assembly in accordance with claim 7 wherein the temperature of said heated air is from about 50°C to about 200°C.

9. A dryer assembly in accordance with a claim 1 wherein a moisture vapor is blown in with the forced air.

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10. A dryer assembly in accordance with claim 1 wherein said moving openings are positioned within a moving perforated belt.

11. A dryer assembly in accordance with claim 10 wherein said belt rotates about said plenum.

12. A dryer assembly in accordance with claim 1 wherein said moving openings form a plurality of moving jets of air.

13. A dryer assembly in accordance with claim 10 wherein there is a random pattern of said openings in said belt along the line of motion for said belt.

14. A dryer assembly in accordance with claim 1 wherein a positive gauge pressure is maintained in said plenum.

15. A dryer assembly according to claim 1, wherein said plenum is a rotating cylindrical cavity having walls including slots formed therein, the slots adapted to form air jets whereby the air can flow from the slots to said wet image.

16. A dryer assembly according to claim 15 wherein said slots are formed at an angle to the radial direction of said cylinder whereby the flow of air through said

slots powers the rotary motion of said cylindrical plenum.

17. A dryer assembly according to claim 15 wherein a sheath is positioned inside said cylindrical plenum, the sheath adapted to allow air flow only through those slots in close proximity to said wet image.

18. An ink jet printing machine for printing a liquid ink image on a sheet of paper moving along a sheet path through a printing zone therein, the ink jet printing machine, comprising:

(a) a frame;

(b) a printhead mounted on the frame and containing liquid ink for depositing a liquid ink image onto the sheet of paper;

(c) a dryer assembly for drying the liquid ink image on the sheet of paper, the dryer assembly including:

(i) a housing defining a portion of the paper sheet moving path;

(ii) a plenum positioned within the housing, the plenum including air flow and an outlet

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means permitting forced air to exit the plenum, the outlet being in the form of a plurality of moving openings adapted to direct flowing air to the liquid image, the openings moving relative to the image;

(iii) a paper sheet transport means for moving the paper carrying the liquid ink image through the housing and under the plurality of moving openings; and

(d) a controller connected to a forced air feeding device for controllably blowing air onto the sheet only when there is sheet movement through the housing of the sheet.

19. An ink jet printing machine according to claim 18 wherein said moving openings are located within a moving perforated belt, the belt rotating about said plenum.

20. An ink jet printing machine according to claim 18 wherein said plenum is a rotating cylindrical cavity having walls including slots formed therein, the slots adapted to form air jets whereby the air can flow from the slots to said wet image.

21. An ink jet printing machine according to claim 20 wherein said slots are formed at an angle to the radial direction of said cylinder whereby the flow of air

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through said slots powers the rotary motion of said cylindrical plenum.

22. An ink jet printing machine according to claim 21 wherein a sheath is positioned inside said cylindrical plenum, the sheath adapted to allow air flow only through those slots in close proximity to said wet image.

23. An inkjet printing machine according to claim 18 wherein said paper sheet transport means includes a controller adapted to move said paper carrying the liquid ink image in contiguous relation to said plurality of moving openings and to stop the image to allow said liquid ink image to dry.

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